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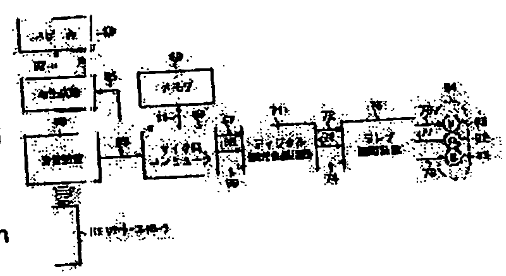
(54) QUANTITY-OF-LIGHT ADJUSTING DEVICE AND QUANTITY-OF-LIGHT ADJUSTING METHOD

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a linear relation between adjusting quantity and quantity of light by setting the adjusting quantity for adjusting the quantity of light, outputting a power proportional to a specified function on the basis of the set adjusting quantity, and reducing the inclination of the function according to the increase in adjusting quantity.
SOLUTION: A remote controller 61 transmits an input signal to a receiving device 62. A regenerating device 86 regenerates the voice signal and dimming data recorded on a CD-ROM. A microcomputer(MC) 64 adjusts the luminance of each lamp 84 on the basis of the data from the regenerating device 86 and the receiving device 62, and also transmits a prescribed control command to the regenerating device 86 to control it. A memory 66 stores the offset luminance data of each lamp 84 and also stores the processing command and calculation data for the processing by the MC 64. A lamp driving device 75 amplifies the power of the electric signal from a digital dimming curve circuit 71. Lamps 81-83 convert the electric signal to color of red R, green G, or blue B, respectively.



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CLAIMS

[Claim(s)]
[Claim 1] Said function f (Q) is a quantity of light adjustment with which the inclination df/dQ is characterized by to decrease with buildup of Q in the quantity of light adjustment equipped with a setting-out means set up the amount Q of accommodation which adjusts the quantity of light, and an output means output the power proportional to Function Af (Q) and (A> 1) based on the amount Q of accommodation set up by said setting-out means.
[Claim 2] Said function f (Q) is a quantity of light adjustment according to claim 1 characterized by being the secondary function of Q.
[Claim 3] Said amount Q of accommodation is a quantity of light adjustment according to claim 1 characterized by what is recorded on the record medium with the sound signal.
[Claim 4] Said function f (Q) is the quantity of light accommodation approach that the inclination df/dQ is characterized by decreasing with buildup of Q in the quantity of light accommodation approach which outputs the power which sets up the amount Q of accommodation which adjusts the quantity of light, and is proportional to Function Af (Q) and (A> 1) based on said set-up amount Q of accommodation.

[Translation done.]

* NOTICES *

CLAIMS

[Claim(s)]
[Claim 1] The cement accelerating agent which comes to contain a fusibility aluminum salt and a fluoride.
[Claim 2] The cement accelerating agent according to claim 1 to which a fusibility aluminum salt is characterized by being an aluminum sulfate or sodium alum.
[Claim 3] The cement accelerating agent according to claim 1 or 2 to which a fluoride is characterized by being a sodium fluoride.
[Claim 4] Quick setting nature cement concrete which comes to contain a cement accelerating agent and cement concrete given [of the claims 1-3] in 1 term.
[Claim 5] The manufacture approach of the quick setting nature cement concrete characterized by feeding separately a cement accelerating agent and cement concrete given [of the claims 1-3] in 1 term, respectively, and carrying out unification mixing by the feeding tubing point.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] Especially this invention relates to the quantity of light adjustment and the quantity of light accommodation approach that straight-line relation is materialized between the visual sensation quantity of light and the amount of accommodation, about a quantity of light adjustment and the quantity of light accommodation approach.
[0002]
[Description of the Prior Art] Change of physical reinforcement, such as light, a sound, and a pressure, and change of the subjective reinforcement of these stimuli that human being senses through a sense organ are not necessarily in agreement. Therefore, in case the equipment which outputs these is designed, it is desirable to take into consideration not only a physical characteristic but a subjective property.
[0003] For example, in the dimmer which adjusts the intensity of lights, such as the light source, even if it makes the physical reinforcement of the light outputted increase linearly, the subjective reinforcement (henceforth the visual sensation quantity of light) of the light which human being senses does not increase linearly. The property required of a dimmer is that the amount of accommodation which adjusts the quantity of light, and the visual sensation quantity of light which the user who recognizes light senses serve as linear relation. Therefore, in case a dimmer is designed, it is necessary to set a modulated light property that the visual sensation quantity of light and the amount of accommodation become straight-line relation.
[0004] It is known between the physical reinforcement of a stimulus, and subjective reinforcement that the fixed principle is working. The formula which expresses the physical reinforcement of light and the relation between the visual sensation quantity of lights below is explained.
[0005] When changing the physical reinforcement M and M of light, between the minimum variation (threshold) deltaM which can sense the change, it is known that the principle (Weber's Law) of the weber shown in a degree type will be materialized.
deltaM/M=constant .... (1)
That is, the ratio of luminous-intensity M and threshold deltaM at that time is fixed irrespective of the value of M. If it puts in another way, when luminous intensity is large, a threshold becomes large, and when luminous intensity is small, a threshold will become small at reverse.
[0006] Next, the relational expression between the physical reinforcement M of light and the visual sensation quantity of light S is derived from the principle of this weber. The following equality will be obtained, if the physical reinforcement of light assumes that the visual sensation quantity of light changes only in deltaS when only deltaM changes.
deltaS=k (deltaM/M) .... (2)
Here, k is a constant. It is as follows when this is expressed as a differential equation.
dS=k (dM/M) .... (3)
When it integrates with the both sides of this formula, it is S=k-loge M+c=k(log M/log e)+c=K-log M+c. .... (4)
Here, log is a common logarithm which uses 10 as a bottom. Moreover, c is an integration

?

constant. This formula expresses the principle (Fechner's Law) of FEFINERU which works between the physical reinforcement M of light, and the visual sensation quantity of light S. As shown in this formula, the visual sensation quantity of light is proportional to the logarithm of the physical reinforcement of light.
[0007] Drawing 10 graph-izes a formula (4). An axis of abscissa 12 expresses the pair numeric value (log M) which uses 10 of the physical reinforcement M of light as a bottom, and the axis of ordinate expresses the visual sensation quantity of light S. At this time, as for a formula (4), an inclination is expressed as a straight line 13 of K.
[0008] Drawing 11 shows the graph with which the physical reinforcement of light changes in time according to the principle of FEFINERU. The axis of abscissa 24 of this graph is time amount t. Moreover, the axis of ordinate 25 shows the pair numeric value log M (it corresponds to a dynamic range) which uses 10 of the physical reinforcement M of light as a bottom. Moreover, in this graph, the value of M is set that log M =0 becomes maximum.
[0009] In this drawing, when changing light based on a straight line 21, by time amount t= 0 [sec], the light of the physical reinforcement of M= 10-4 (log M=-4) will be outputted. And reinforcement increases with the passage of time and the light of the reinforcement of M=100=1 (log M =0) is outputted in t= 1 [sec].
[0010] Although the axis of abscissa 24 of this drawing is time amount t, the relation between the amount Q of accommodation and the physical reinforcement M of light can be obtained by permuting this by the amount Q of accommodation. If these straight lines are used, the modulated light property based on the principle of FEFINERU is realizable. In addition, when the point P11 on each straight line 21 thru/or 23 P15 and P21 P25 and P31 thru/or P35 perform gradual quantity of light accommodation at this time, an example of the point used as central value of each straight line is shown. That is, the five points are arranged on each straight line, and it is possible to perform five steps of quantity of light accommodation by using these.
[0011]
[Problem(s) to be Solved by the Invention] However, it is known that the formula (1) which made the premise and was used in order to derive the formula (4) showing the relation between the visual sensation quantity of light and the physical reinforcement of light will not be materialized when the value of M is very small, or when very large (for example, reference "George A.Miller, "Psychology", pp.106, 1962", reference " "the foundation of color dynamics", pp.155"). Although the visual sensation quantity of light should change at a fixed rate in time when changing luminous intensity in time based on the result, for example, the modulated light property of the straight line 21 of drawing 11 , the technical problem that the direction when reinforcement is strong was sensed actual to change a lot compared with the case where the physical reinforcement of light is small occurred.
[0012] Moreover, it is known that the dynamic range of the physical reinforcement of the light which human being can perceive is dramatically large. Then, with the dimmer which took the large range of the quantity of light which can be adjusted, in order to deviate from the range where a formula (1) is materialized, when especially the quantity of light was small, the technical problem of the straight-line relation between the amount of accommodation and the visual sensation quantity of light stopping materializing occurred, so that it could respond to this large dynamic range.

$\frac{\Delta M}{M}$

[0013] This invention is for being made in view of such a situation and making linear relation between the visual sensation quantity of light and the amount of accommodation.
[0014]
[Means for Solving the Problem] In the quantity of light adjustment with which the quantity of light adjustment according to claim 1 was equipped with a setting-out means set up the amount Q of accommodation which adjusts the quantity of light, and an output means output the power with which it is proportional to Function Af (Q) and (A> 1) based on the amount Q of accommodation to which it was set by the setting-out means, function f (Q) is characterized by for the inclination df/dQ to decrease with buildup of Q.
[0015] In the quantity of light accommodation approach which outputs the power which the quantity of light accommodation approach according to claim 4 sets up the amount Q of

accommodation which adjusts the quantity of light, and is proportional to Function Af (Q) and (A> 1) based on the obtained amount Q of accommodation, function f (Q) is characterized by the inclination df/dQ decreasing with buildup of Q.

[0016] In a quantity of light adjustment according to claim 1, as for function f (Q), the inclination df/dQ decreases with buildup of Q in the quantity of light adjustment with which an output means outputs the power proportional to Function Af (Q) and (A> 1) based on the amount Q of accommodation which the setting-out means set up the amount Q of accommodation which adjusts the quantity of light, and was set up by the setting-out means.

[0017] In the quantity of light accommodation approach according to claim 4, as for function f (Q), the inclination df/dQ decreases with buildup of Q in the quantity of light accommodation approach which outputs the power which sets up the amount Q of accommodation which adjusts the quantity of light, and is proportional to Function Af (Q) and (A> 1) based on the obtained amount Q of accommodation.

[0018]

[Embodiment of the Invention] This description explains the modulated light property that straight-line relation (proportionality) is first materialized between the visual sensation quantity of light which is one example of this invention, and the amount of accommodation. Then, one example of the dimmer using this modulated light property is explained.

[0019] In addition, especially in this description, unless it refuses, it adds that the amount of accommodation and an input value are synonymous.

[0020] The curve 53 of drawing 1 shows the modulated light property (modulated light curve) which is one example of this invention. The axis of abscissa 51 expresses time amount t or the amount Q of accommodation with this graph. Moreover, an axis of ordinate 52 is the pair numeric value log M of the physical reinforcement M of light. It is shown. the point P51 thru/or P55 — the amount of accommodation (or time amount) — respectively — 0, 0.25, 0.5, and 0. — the point on the graph at the time of being 75 and 1 is shown. [moreover,] Moreover, the straight line 54 touches the curve 53 in t= 1.

[0021] This curve 53 is expressed by the following formula.

log M=2 (t−1) (2−t) .... (5)

Moreover, if the amount Q of accommodation is used instead of time amount t, a degree type can express.

log M=2 (Q−1) (2−Q) .... (6)

[0022] Here, it is as follows when this formula is transformed about M paying attention to a formula (6).

M= 102 (Q−1) (2−Q) .... (7)

Here, when it sets with f(Q) =2 (2−Q) (Q−1), a formula (7) is expressed as follows.

M= 10f (Q) .... (8)

[0023] By the way, this inclination df/dQ of f (Q) is as follows.

df/dQ=−2 (2Q−3) .... (9)

It is as follows when it asks for each inclination at the time of Q= 0 and Q= 1.

df/dQ=6 (Q= 0) .... (10)

df/dQ=2 (Q= 1) .... (11)

That is, an inclination decreases in monotone with the increment in Q.

[0024] Change of log M to Q becomes small as change (inclination) of log M to the amount Q of accommodation will be large and luminous intensity will become large, when the pair numeric value log M of the physical reinforcement of light is small if the curve expressed by the formula (7) is used as a modulated light property. If such a modulated light property is used, even when a large dynamic range (the range of change of M) is taken, the relation between the amount of accommodation and the visual sensation quantity of light will become linear (when the physical reinforcement of light is small especially).

[0025] In addition, it is as follows when it asks for the general formula of a formula (5) and a formula (6).

log M= (−N2+(N2−N1) t) (t−1) .... (12)

log M= (−N2+(N2−N1) Q) (Q−1) .... (13)

Here, N1 shows the coordinate to which the straight line 54 which :ouches a curve 53 in t= 1 (or Q= 1) touches an axis of ordinate. Moreover, N2 is log M in t= 0 (oı Q= 0). It is a value.
[0026] In the above explanation, f (Q) was made into the secondary function in the formula (8).. However, f (Q) should just be a function with which inclination df/dQ decreases with the increment in Q in the range of modulated light rather than is limited only to a secondary function.

[0027] Next, one example of this invention is explained.
[0028] Drawing 2 is the block diagram of one example of the dimmer which applied this invention. With this equipment, it is made as [modulate / the light of each brightness of three lamps, red (R), green (G), and blue (B), / based on the modulated light data reproduced with a regenerative apparatus (setting-out means)]. In addition, this modulated light data is recorded on the record medium (not shown) with the sound signal. Moreover, the average brightness (offset brightness) of each lamp is made as [adjust / it / by the remote controller].
[0029] A remote controller 61 (setting-out means) changes the input from an operator for example, into an infrared signal etc., and is made as [transmit / to a receiving set 62]. The receiving set 62 is made as [receive / the infrared signal which the remote controller 61 transmitted].
[0030] The regenerative apparatus 86 consists of for example, CD drive equipment, MD drive equipment, etc., and is made as [reproduce / the sound signal and modulated light data which are recorded on disks such as CD-ROM and MD-DATA]. Moreover, the loudspeaker 88 is made as [output / the sound signal supplied from a regenerative apparatus 86 / to voice / change and].
[0031] A microcomputer 64 sends out predetermined control command to a regenerative apparatus 86, and is made as [perform / the control] while adjusting the brightness of a lamp based on the data supplied from the regenerative apparatus 86 or the receiving set 62. Memory 66 is made as [memorize / a processing command and count data], in case a microcomputer 64 processes, while memorizing the current offset brightness data of each lamp. The digital modulated light curvilinear circuit 71 (output means) is made as [change / into a corresponding electrical signal / the brightness data of the lamp supplied from a microcomputer 64].
[0032] Moreover, the lamp driving gear 75 (output means) is made as [amplify / the power of the electrical signal supplied from the digital modulated light curvilinear circuit 71]. A lamp 81 thru/or 83 change an electrical signal into the light of red (R), green (G), or blue (B), respectively, for example, is constituted by an incandescent lamp, light emitting diode (LED;Light Emitting Diode), etc. Moreover, the diffuser 84 is made as [carry out / carry out color mixture of the light emitted from a lamp 81 thru/or 83 suitably, and / light / the diffused light].
[0033] Drawing 3 is drawing for explaining the key arranged at the remote controller 61. The R key 91, the G key 92, and the B key 93 are keys which specify the lamp used as the object which adjusts offset brightness. That is, in the R key 91, the G key 92 specifies a lamp 82 and the B key 93 specifies a lamp 83 for a lamp 81, respectively. The UP key 94 is operated when making offset brightness increase. The DOWN key 95 is operated when decreasing offset brightness. Moreover, the playback key 96 is for starting playback of a regenerative apparatus 86.
[0034] Next, actuation of the example shown in drawing 2 is explained.
[0035] Actuation of the playback key 96 of a remote controller 61 inputs the manipulate signal into a microcomputer 64 through a receiving set 62. A microcomputer 64 controls a regenerative apparatus 86 and makes playback of a record medium start at this time. In a regenerative apparatus 86, if playback of a record medium is started, while a sound signal will be supplied to a loudspeaker 88 among regenerative signals, modulated light data are supplied to a microcomputer 64.
[0036] A microcomputer 64 reads first the current offset brightness data of three lamps memorized by memory 66. Next, current offset brightness data are added to the modulated light data supplied from the regenerative apparatus 86. And the brightness data obtained as a result are supplied to the digital modulated light curvilinear circuit 71 through a signal line 67 thru/or a signal line 69.

[0037] The brightness data to each lamp supplied from the microcomputer 64 are changed into a corresponding electrical signal, and the digital modulated light curvilinear circuit 71 supplies them to the lamp driving gear 75 through a signal line 72 thru/or a signal line 74. The lamp driving gear 75 amplifies the power of the electrical signal supplied from the digital modulated light curvilinear circuit 71, supplies power to a lamp 81 thru/or a lamp 83 through a signal line 76 thru/or a signal line 78, and makes those lamps turn on. Color mixture of the light generated by a lamp 81 thru/or 83 is suitably carried out with a diffuser 84. The light changes corresponding to modulated light data. thereby — a user — this — so to speak — light — change and music of light which should be referred to as easy can be enjoyed.
[0038] Then, a remote controller 61 explains the actuation in the case of changing the offset brightness of a lamp.
[0039] When an operator operates any of the R key 91 of a remote controller 61, the G key 92, or the B key 93 they are, the lamp used as the object which adjusts offset brightness will be chosen. And if the UP key 94 and the DOWN key 95 are operated, the light of the offset brightness of the lamp chosen as an object of accommodation can be modulated.
[0040] Drawing 4 is a flow chart which explains the processing which adjusts the offset brightness of a lamp by the remote controller 61.
[0041] If this processing is performed, in step S11, a microcomputer 64 will judge whether the R key 91 of a remote controller 61, the G key 92, or the B key 93 was pressed. If it judges with (NO) which is not pushed, the same processing will be repeated until return and a key are pushed on step S11. Moreover, if it judges with having been pushed (YES), it will progress to step S12.
[0042] In step S12, a microcomputer 64 reads the current offset brightness data of the lamp corresponding to the pressed key from memory 66. And at step S13, it distinguishes whether which key of the UP key 94 or the DOWN key 95 was pressed. If it judges with (1) on which the UP key 94 was pushed, it progresses to step S15, and the count by which the UP key 94 was pushed on current offset brightness data will be added, and it will progress to step S17. Moreover, if it judges with (2) on which the DOWN key 95 was pushed, it progresses to step S16, and the count on which the DOWN key 95 was pushed will be subtracted from current offset brightness data, and it will progress to step S17.
[0043] Step S17 is processing performed when the data obtained as a result of the operation have caused overflow or an underflow. When offset brightness data are reset to 1023 when overflow has arisen (offset brightness data > 1023), and the underflow has arisen (offset brightness data <0), offset brightness data are reset to 0. Then, offset brightness data are stored in memory 66 in step S18. And the modulated light data supplied from the regenerative apparatus 86 are added to this offset brightness data, and brightness data are generated (step S19). In addition, overflow and underflow processing are again performed if needed at this time. Furthermore, the obtained brightness data are outputted to the digital modulated light curvilinear circuit 71 (step S20), and processing is ended (end).
[0044] A concrete example explains the above processing. Now, if an operator presses the R key 91 of a remote controller 61, a microcomputer 64 will detect that the R key 91 was pressed (step S11). And the current offset brightness data of the lamp 81 corresponding to this R key 91 are read from memory 66 (step S12). Then, an operator's push of the UP key 94 adds the value which is the count on which the UP key 94 was pushed to the present offset brightness data (step S15). And overflow processing is performed if needed (step S17), and the offset brightness data obtained as a result of the operation are stored in memory 66 (step S18). Furthermore, the modulated light data supplied from the regenerative apparatus 86 and offset brightness data are added, if required, overflow and underflow processing will be performed to this data, and the brightness data of a lamp R81 will be generated (step S19). And the obtained brightness data are outputted to the digital modulated light curvilinear circuit 71 through a signal line 67 (step S20), and processing is ended (end).
[0045] Drawing 5 is the block diagram showing the example of a configuration of the digital modulated light curvilinear circuit 71 shown in drawing 2 . This block diagram shows only the block over a lamp 81 among the digital modulated light curvilinear circuits 71. That is, the signal

line 67 and signal line 72 of this drawing correspond with the signal line 67 of drawing 2 , and a signal line 72, respectively.
[0046] In this drawing, a counter 101 counts the number of the pulses of the pulse signal supplied from a signal line 112 (counting), and is made as [output / that value / as 10-bit data]. Moreover, this counter 101 is reset by the reset signal (supplied from a microcomputer 64 through a signal line 102).
[0047] PROM (Programmable Read Only Memory)104 has memorized the modulated light curve as 10-bit data. Moreover, clock generation equipment 108 generates the clock signal (16MHz) used as criteria, and is made as [supply / a counter 106 and D flip-flop 111].
[0048] A counter 106 reads 10 bit data supplied from PROM104, and counts down this data synchronizing with the clock signal supplied from clock generation equipment 108. And when the enumerated data are set to "0", it is made as [output / a pulse signal].
[0049] D flip-flop 111 is made as [output / the pulse signal outputted from a counter 106 / one clock is delayed and]. Moreover, magnitude-comparison equipment 113 compares the output signal of the counter 101 supplied through a signal line 103 with the brightness data supplied through a signal line 67, and is made as [generate / an PWM (Pulse Width Modulation) signal].
[0050] In addition, PWM is the modulation (Modulation) approach of controlling the power to output, by changing the width of face (Width) of a pulse (Pulse).
[0051] Drawing 6 is drawing explaining the data of the modulated light curve stored in PROM104. In this graph, the axis of abscissa 131 expresses the data supplied to PROM104 through a signal line 103, and this supports the amount Q of accommodation. The axis of ordinate 132 expresses the time amount t of the pulse width of the PWM signal outputted from magnitude-comparison equipment 113, and this supports the physical reinforcement M of light. In addition, when using a formula (7) as this modulated light curve, this curve 133 is expressed with the following formula.
t=10g(-N2+(N2-N1) hQ) (hQ-1) +i .... (13)
However, g, h, and i are constants. These values are suitably set up according to the electrical potential difference of the pulse signal to output, the frequency of a clock, etc.
[0052] moreover, T0, T1, T3, and — input data — "1" — the increment of the pulse width when increasing is shown. For example, the width of face t of the pulse outputted when input data is "0" is T0, and when only 1 increases and input data is set to "1", the time amount width of face t of the pulse outputted serves as the value t (t=T0+T1) which newly added T1 to the above-mentioned T0. The following relation is materialized between the data Di (0<=i<=1023) stored in these data Ti (0<=i<=1023) and PROM104.
Ti=DixTclock (0<=i<=1023) .... (14)
Here, Tclock is a clock period (= 1/16MHz).
[0053] Here, if the range of the input data in the curve 133 of drawing 6 is 10 bits, it will turn into the range of 0 thru/or 1023. Moreover, the width of face of the pulse outputted serves as the range of the period of 0 thru/or a reset signal 102. That is, the minimum value turns into maximum (<= (T0+T1+T2+ .... +T1023) reset period) by 0.
[0054] If the axis of ordinate of drawing 6 is expressed with a logarithm, the graph shown in drawing 7 will be obtained. In this drawing, the straight line 144 expresses the conventional modulated light property. Moreover, the curve 143 expresses the modulated light property about this invention. In the conventional modulated light property, the pair numeric value (it is proportional to the pair numeric value of pulse width) and input data of brightness of a lamp suited proportional relation. However, in the modulated light property about this invention, the inclination (change of the brightness to change of the amount of accommodation) of a modulated light property is loose as brightness becomes large. Thereby, corresponding to modulated light data, the visual sensation quantity of light can be changed smoothly.
[0055] In addition, in drawing 7 (drawing 6), the scaling has been carried out corresponding to the characteristic curve of drawing 1 . That is, in drawing 7 , when the PWM signal which has pulse width t corresponding to Q= 1023 is impressed to a lamp, it is made to have reinforcement at the time of Q= 1 which the luminous intensity of the lamp shows to drawing 1 , and the luminous intensity at the time of Q= 0 is set up similarly. This is equivalent to setting constants g, h, and i as a predetermined value in the above-mentioned formula (13).

[0056] Drawing 8 is a timing chart explaining the signal for the body of the block diagram of drawing 5 . Hereafter, the signal shown in this drawing is explained simply. Then, actuation of the block diagram of drawing 5 is explained using this timing chart.
[0057] Drawing 8 (A) shows the clock (pulse) signal supplied from clock generation equipment 108. Moreover, the PROM output signal (drawing 8 (B)) expresses the data (D0 thru/or D1023) which are 10 bits which PROM104 outputs. Counter 106 output signal (drawing 8 (C)) is a pulse signal which a counter 106 outputs at the time of count-down termination. A D-flip-flop output signal (drawing 8 (D)) is a pulse signal which D flip-flop 111 outputs. [0058] A reset signal (drawing 8 (E)) is a signal set to "L" 1/120 [sec] period, and a counter 101 is reset when this signal changes into the condition of "L." Moreover, counter 101 output signal (drawing 8 (F)) is data (0 thru/or 1023) which are 10 bits outputted as a result of a counter's 101 counting the pulse number of the output signal (drawing 8 (D)) of D flip-flop 111. An PWM signal (drawing 8 (G)) is a signal outputted from magnitude-comparison equipment 113. Moreover, finally drawing 8 (H) shows the period (1 / 120 seconds) by which the above cycle is repeated.
[0059] Next, actuation of the example of drawing 5 is explained based on this timing chart.
[0060] A counter 101 counts the number of the pulses of the output signal (drawing 8 (D)) of D flip-flop 111. And magnitude-comparison equipment 113 and PROM104 are supplied through a signal line 103 by using the number of counts as 10 bit data (drawing 8 (F)).
[0061] PROM104 supplies the data (D0 thru/or D1023; drawing 8 (B)) of the modulated light curve stored in the address specified with 10 bit data supplied from a counter 101 to a counter 106 through a signal line 105. A counter 106 reads modulated light curvilinear data (PROM output signal (drawing 8 (B))) synchronizing with the LOAD signal (D-flip-flop output signal (drawing 8 (D))) supplied through a signal line 112. And the read data of a modulated light curve are counted down from the event of the pulse of the clock supplied from clock generation equipment 108 coming. When data are set to "0" as a result of a count-down, the pulse which shows termination of a count-down is supplied to D flip-flop 111 through a signal line 107.
[0062] D flip-flop 111 is delayed by one clock with a clock signal (drawing 8 (A)) in the pulse signal (drawing 8 (C)) supplied from the counter 106, and supplies this delayed signal (drawing 8 (D)) to a counter 101 and a counter 106. A counter 101 counts up the number of the pulses supplied from D flip-flop 111 as mentioned above, and supplies it to PROM104 and magnitude-comparison equipment 113 as 10 bit data.
[0063] Magnitude-comparison equipment 113 changes an output signal into the condition of "H" (drawing 8 (G)), when the data supplied from a counter 101 are set to "0" (reset). And when the data (drawing 8 (F)) supplied from the counter 101 are compared with the brightness data supplied from the microcomputer 64 of drawing 2 and the value of these two data becomes equal, an output is changed into the condition of "L" (drawing 8 (G)). This signal is supplied to the lamp driving gear 75 through a signal line 72 as an PWM signal. Moreover, the actuation shown above is repeated considering 1/120 [sec] as 1 cycle (drawing 8 (H)).
[0064] Next, the case where the brightness data supplied from a microcomputer 64 are "10" is mentioned as an example, and concrete explanation is given about actuation of the digital modulated light curvilinear circuit 71.
[0065] A counter 101 is reset when a reset signal changes to the condition of "L." Since the output of a counter 101 is set to "0" at this time, magnitude-comparison equipment 113 changes an output (drawing 8 (G)) into the condition of "H" as mentioned above.
[0066] If actuation of a circuit is repeated and D flip-flop 111 outputs the 9th pulse signal (drawing 8 (D)) after reset arises, a counter 101 will output the number of counts "9" (drawing 8 (F)) of a pulse. PROM104 to which this data "9" was supplied outputs the data D9 (drawing 8 (B)) stored in the address "9."
[0067] A counter 106 reads this data, when the pulse (drawing 8 (D)) of the LOAD signal supplied from D flip-flop 111 comes, and it starts a count-down of a clock (drawing 8 (A)). and a count-down — ending (counted value being set to "0") — a pulse (drawing 8 (C)) is outputted and it is shown that the count-down was completed.
[0068] D flip-flop 111 is delayed by one clock in this pulse (drawing 8 (C)), and outputs a pulse (drawing 8 (D)). A counter 101 counts this pulse and outputs the data (counted value)

"10" (drawing 8 (F)) in which it is shown that the 10th pulse came
[0069] It detects that magnitude-comparison equipment 113 has equal this data "10" and brightness data supplied from a microcomputer 64, and an output signal (PWM) is changed into the condition of "L" (drawing 8 (G)). And this condition is held until a reset signal is again inputted in the following cycle.
[0070] The PWM signal for 1 cycle (drawing 8 (G)) is generated by the above actuation. And this PWM signal is amplified by the lamp driving gear 75 to the power which can drive a lamp, and is supplied to a lamp 81.
[0071] In addition, above, only the block corresponding to a lamp 81 was shown. What is necessary is to make the counter 101 of this block, PROM104, a counter 106, clock generation equipment 108, and D flip-flop 111 into common block, and just to newly add the magnitude-comparison equipment 113 only for each lamps to this common block, in order to modulate the light of other lamps. That is, the magnitude-comparison equipment 113 only for each lamps is newly connected to a signal line 103, and the signal lines 68 and 69 and the output signal lines 73 and 74 of brightness data are connected to a microcomputer 64 and the lamp driving gear 75, respectively.
[0072] In this case, the brightness data to each lamp are supplied to each magnitude-comparison equipment 113 from a microcomputer 64. And the signal outputted from a counter 101, and when each brightness data becomes equal, each magnitude-comparison equipment 113 changes an output (PWM) signal into the condition of "L."
[0073] According to the above dimmer, it becomes possible to make linear relation between the visual sensation quantity of light and the amount of accommodation.
[0074] Moreover, according to this equipment, it becomes possible to modulate the light of two or more lamps only by adding magnitude-comparison equipment 113.
[0075] In addition, although the modulated light curve containing the secondary function of a formula (13) was used in this example, the same effectiveness can be acquired even if it uses other functions with which the inclination decreases with the increment in the amount Q of accommodation.
[0076] moreover — this example — as a modulated light curve — M= 10f (Q) (formula (8)) — the curve was used. However, it cannot be overemphasized that what is necessary is just to choose as arbitration the predetermined constant with which it is satisfied of the conditions used as A> 1 in M=Af (Q), for example as a value of the value of A.
[0077] Furthermore, as it is not necessary to be the sampled value of a continuous curve like the graph shown in drawing 6 for example, and is shown in drawing 9 , the sampled value of a discontinuous modulated light property may be used for a modulated light curve. In the case of this graph, T0 thru/or T3 are the averages of T0 thru/or T3 in a curve [**** / drawing 6], and is mutually equal (average of T0 thru/or T3 of T0=T1=T2=T3= drawing 6). Therefore, it becomes possible to unify the data D0 of PROM104 showing such time amount thru/or D3 into one data. In this case, it becomes possible to reduce the amount of the data registered into PROM104 to one fourth. However, since a flicker may arise in case a lamp is adjusted when the amount of data is decreased extremely, in order to avoid this, it is desirable to set the greatest width of face made discontinuous below to ****** of an eye.
[0078] Finally, by this example, offset brightness data are added to the modulated light data supplied from a regenerative apparatus 86, and it was made to modulate the light of a lamp. However, you may make it supply the digital modulated light curvilinear circuit 71 directly by using this offset brightness data as brightness data. In this case, the brightness of a lamp is controllable by operating a remote controller 61 with a manual. That is, it becomes possible to use this invention as a pure dimmer for adjusting the quantity of light of a lamp by the manual. Moreover, it cannot be overemphasized that the objects for modulated light may be luminescence equipments, such as LED and a fluorescent lamp, or CRT (Cathode Ray Tube).
[0079]
[Effect of the Invention] According to a quantity of light adjustment according to claim 1 and the quantity of light accommodation approach according to claim 4 Since the amount Q of accommodation which adjusts the quantity of light was set up, and it is made to output the

power proportional to Function Af (Q) and (A> 1) and was made fo· inclination df/dQ of function f (Q) to decrease with buildup of Q based on the set-up amount Q of accommodation The amount of accommodation and the visual sensation quantity of ligt t can be considered as linear relation.

[Translation done.]

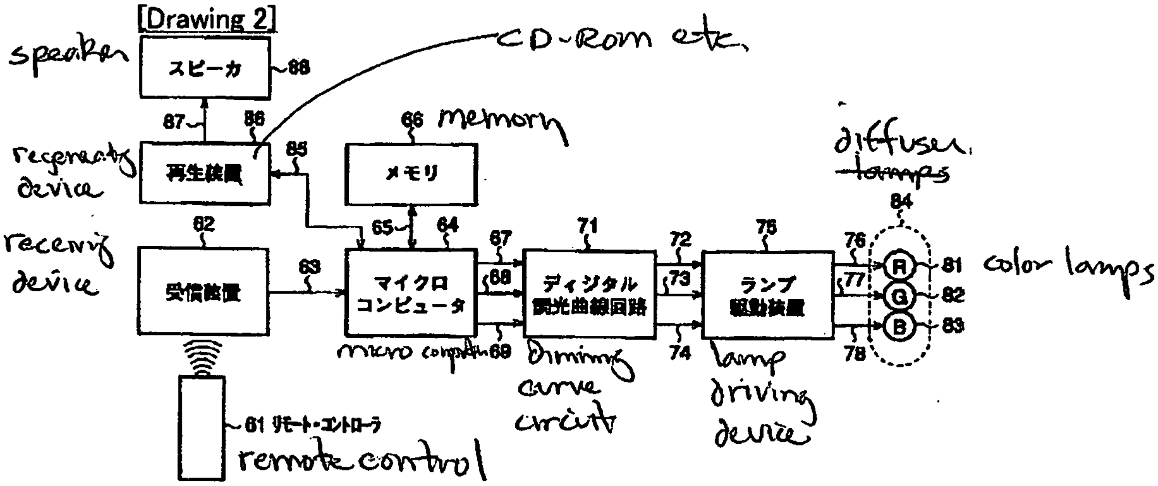
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing showing one example of the modulated light curve about this invention.
[Drawing 2] It is the block diagram showing the configuration of one example of the dimmer about this invention.
[Drawing 3] It is drawing explaining the key arranged at a remote controller.
[Drawing 4] It is a flow chart explaining actuation of the example of drawing 2 .
[Drawing 5] It is the block diagram showing the detail of the digital modulated light curvilinear circuit of drawing 2 .
[Drawing 6] It is drawing explaining the data of the modulated light curve stored in PROM of drawing 2 .
[Drawing 7] It is drawing which replotted the modulated light curve of drawing 6 to the system of coordinates whose axis of ordinate is the pair numeric value of pu se width.
[Drawing 8] It is the timing chart which shows the timing of actuation for the body of the example of drawing 5 .
[Drawing 9] It is drawing explaining other data of the modulated light curve stored in PROM of drawing 2 .
[Drawing 10] It is drawing explaining the principle of FEFINERU.
[Drawing 11] It is drawing explaining an example of the conventional modulated light curve.
[Description of Notations]
61 Remote Controller
62 Receiving Set
64 Microcomputer
66 Memory
71 Digital Modulated Light Curvilinear Circuit (Output Means)
75 Lamp Actuation Circuit (Output Means)
81 thru/or 83 Lamp
86 Regenerative Apparatus (Setting-Out Means)
88 Loudspeaker
101,106 Counter
104 PROM
108 Clock Generation Circuit
111 D Flip-flop
113 Magnitude-Comparison Equipment

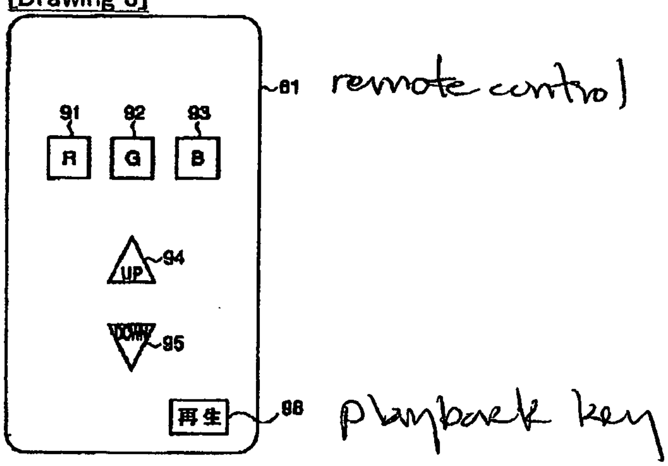
[Translation done.]

DRAWINGS

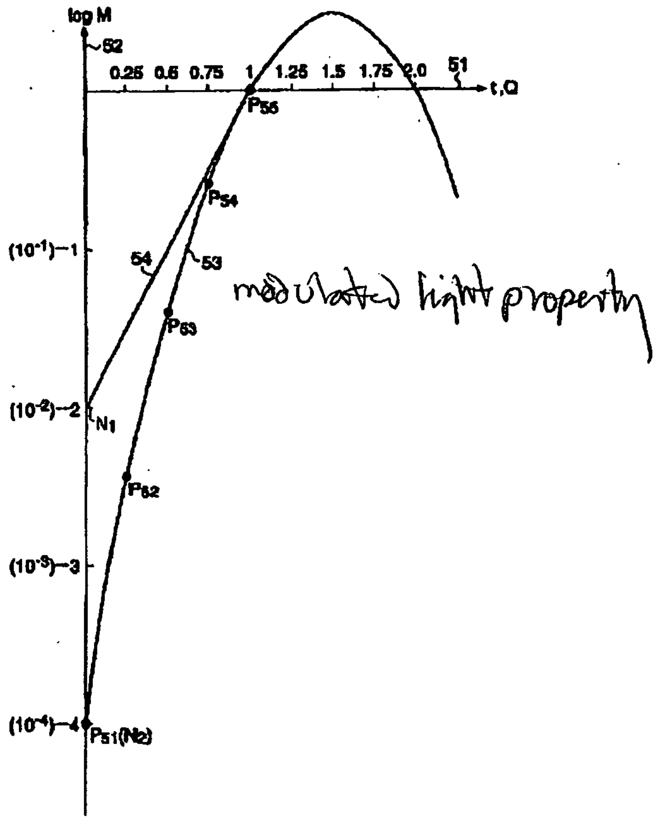
[Drawing 2]



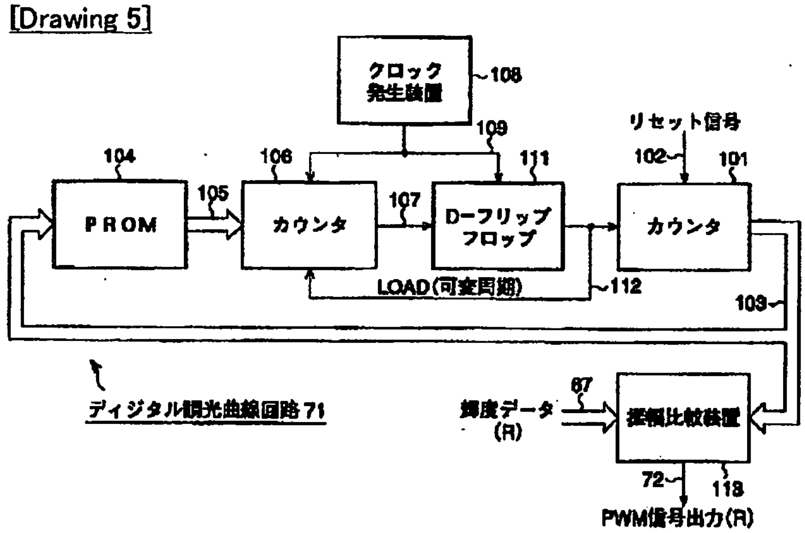
[Drawing 3]



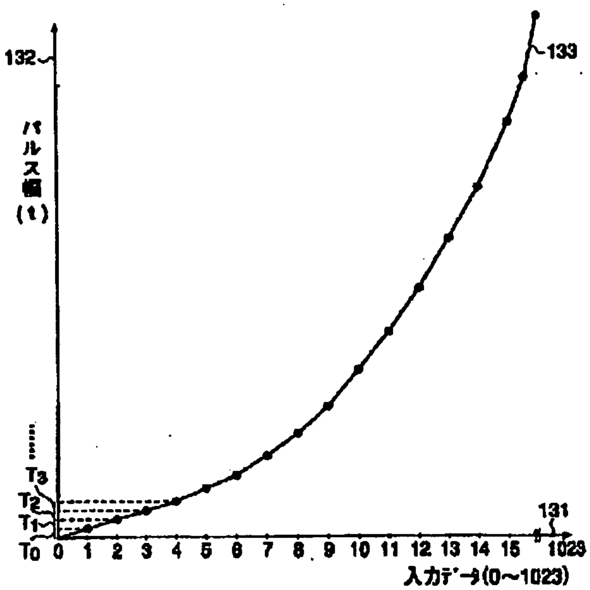
[Drawing 1]



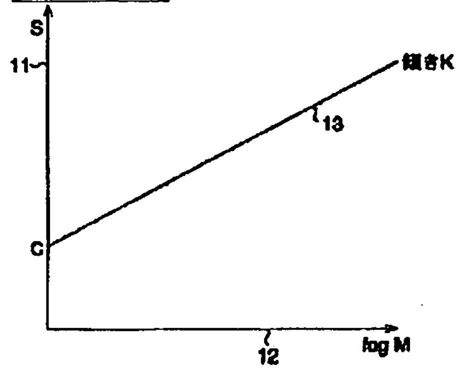
[Drawing 5]



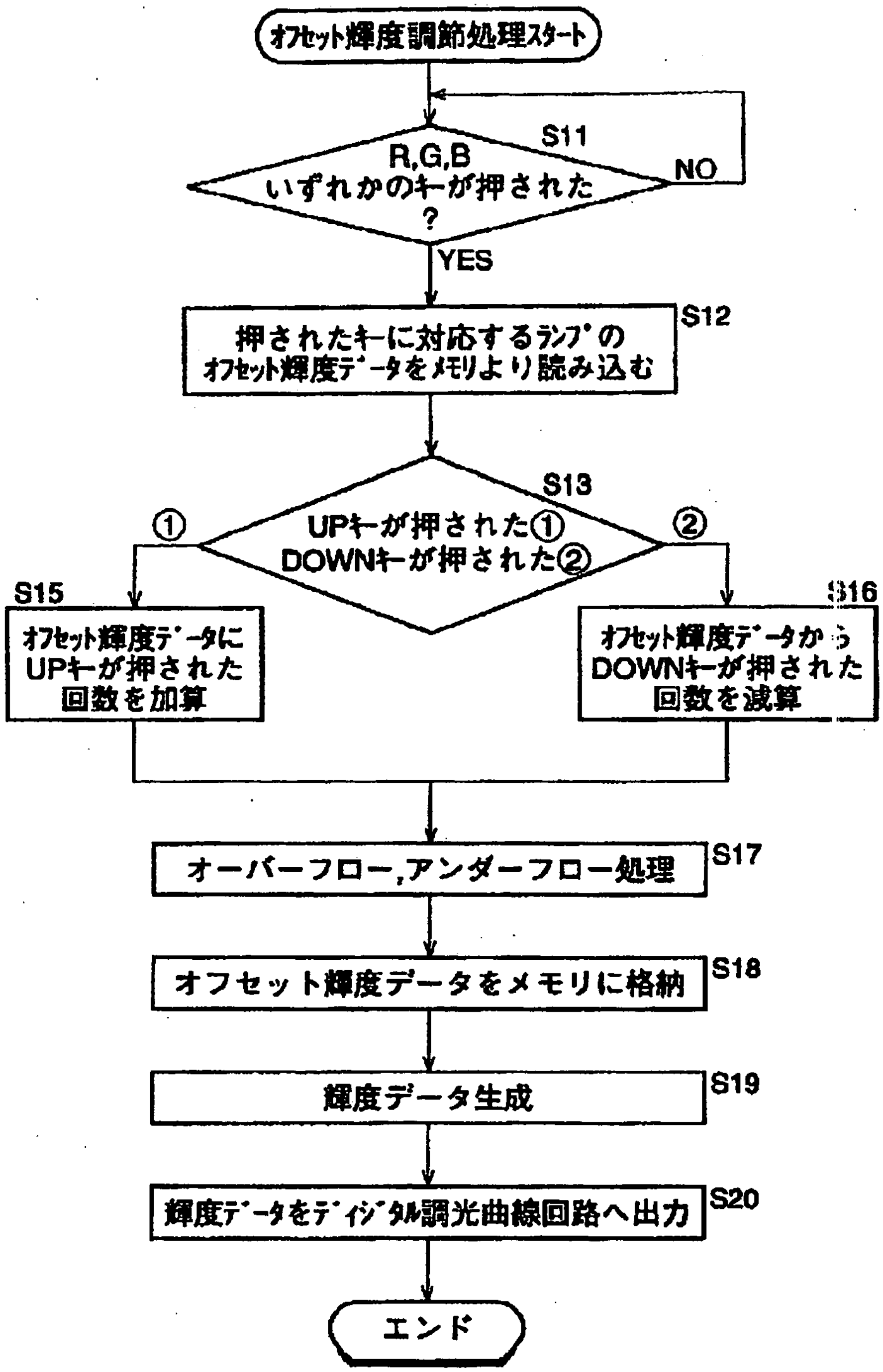
[Drawing 6]



[Drawing 10]

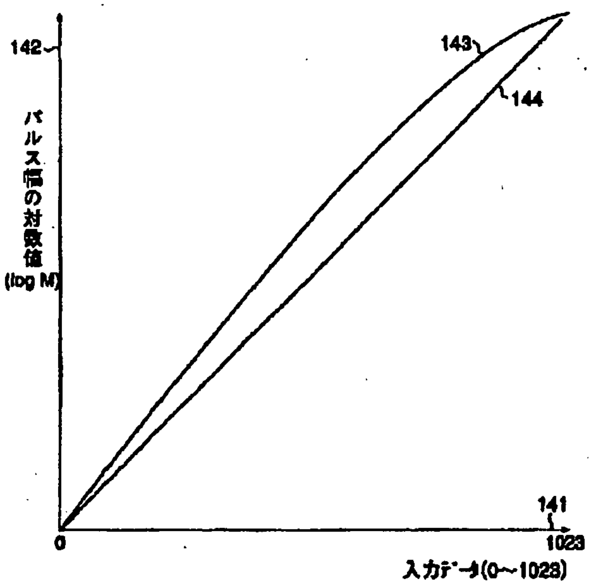


[Drawing 4]

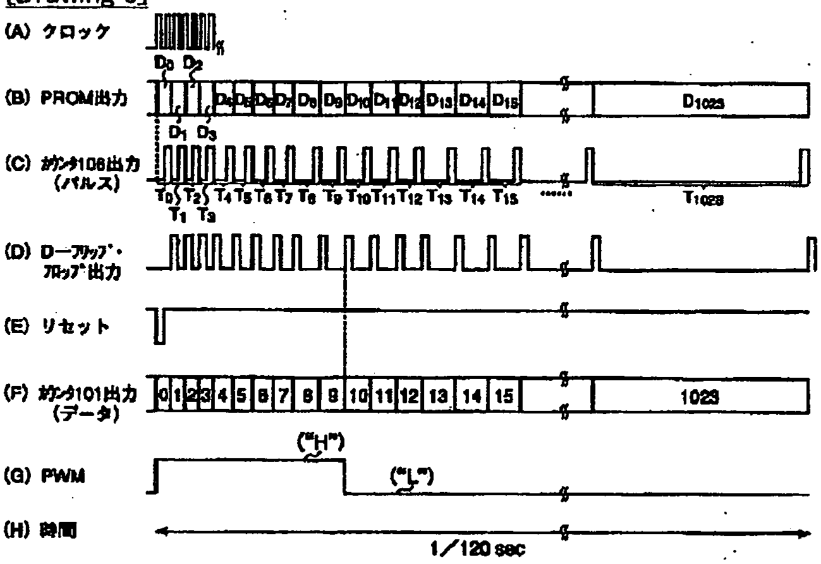


オフセット輝度調節処理スタート
S11
R,G,B
いずれかのキーが押された
?
NO
YES
S12
押されたキーに対応するランプの
オフセット輝度データをメモリより読み込む
S13
UPキーが押された①
DOWNキーが押された②
①
②
S15
オフセット輝度データに
UPキーが押された
回数を加算
S16
オフセット輝度データから
DOWNキーが押された
回数を減算
S17
オーバーフロー,アンダーフロー処理
S18
オフセット輝度データをメモリに格納
S19
輝度データ生成
S20
輝度データをディジタル調光曲線回路へ出力
エンド

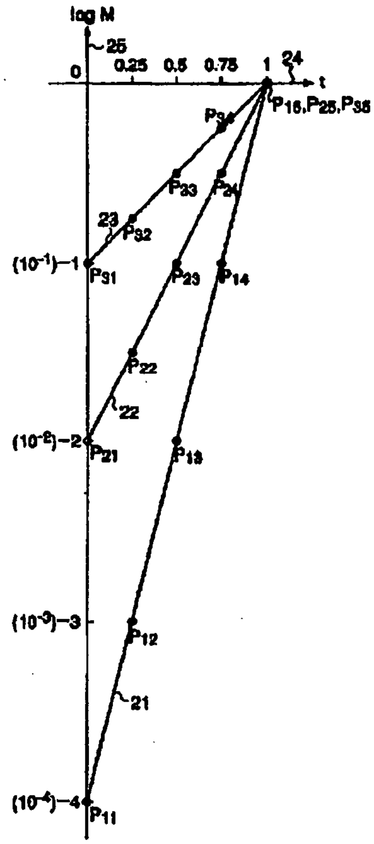
[Drawing 7]



[Drawing 8]

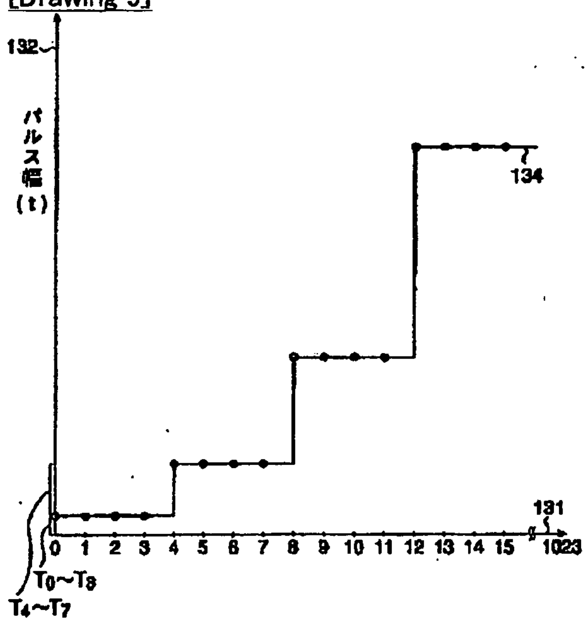


[Drawing 11]



Fechner's Law

[Drawing 9]



[Translation done.]